

## REMARKS

### 1. Status of the Claims

Claims 1-21 are pending in this application and were rejected in the office action. No amendments have been made in this response. A copy of the claims is included in this response for the convenience of the Examiner.

### 2. Rejections under 35 U.S.C. § 102 and § 103

The Examiner rejected claims 1-21 under § 102(b) and § 103(a) in view of O'Brien (US 5,521,278) and Drysdale (US 5,236,560). Applicant respectfully disagrees with the rejections and requests reconsideration.

Claim 1 recites a process for the purification of lactide in which a rectification column is mounted onto a reactor in which depolymerization of low molecular weight PLA takes place to generate a vapor product stream comprising lactide. This arrangement allows any components of the vapor product stream that condense in the rectification column to flow back into the reactor on a continuous basis, thereby helping to increase lactide yields without the need for a purge stream. As is clear from the language of claim 1, the rectification of the lactide in the rectification column takes place in the vapor phase and establishes vapor fractions.

The above arrangement, whereby a rectification column is mounted onto a depolymerization reactor, and whereby vapor phase rectification of lactide takes place in the column, is not disclosed or suggested by O'Brien (US 5,521,278) or Drysdale (US 5,236,560).

According to O'Brien, crude lactide is generated by thermally-induced depolymerization (cracking) in a cracking vessel (900). (See Figures 1A and 1B, and column 11, line 28 through column 13, line 6.) The fraction containing major amounts of lactide is removed from the

cracking vessel, is condensed (1000), and the resulting liquid is thereafter purified by distillation (1400). In order to provide the desired, polymer-grade lactide product, the concentrated lactide obtained from the distillation must then be subjected to melt-crystallization (2000). Thus, it is clear that O'Brien fails to disclose a process according to the present invention since: (1) there is no rectification column mounted on a lactide reactor in a manner such that condensate from the column can be continuously returned to the reactor; and (2) there is no vapor-phase purification of crude lactide.

Drysdale is discussed in the present specification, with reference to its European counterpart (EP0630371), at page 2, lines 16-30, and page 6, line 15-22. According to Drysdale, a crude lactide stream from a depolymerization unit (where depolymerization is again carried out by cracking) is condensed and the resulting liquid (condensate) is fed through a line (line 2) to a distillation column. (See Figure 1, and column 5, line 67 through column 6, line 7.) Thus, it is clear that Drysdale also fails to disclose a process according to the present invention since: (1) there is no rectification column mounted on a lactide reactor in a manner such that condensate from the column can be continuously returned to the reactor; and (2) the feed stream to the purification step (distillation) is a liquid condensate and is not a vapor.

Neither O'Brien nor Drysdale disclose every element of claim 1 or render that claim obvious. Claims 2-21 depend on claim 1, and are therefore also novel and nonobvious.

Applicant requests that the anticipation and obviousness rejections of claims 1-21 be withdrawn.

### **3. Conclusion**

Applicant believes that claims 1-21 are in condition for allowance. Please contact the undersigned attorney if there are any questions regarding this response.

Respectfully submitted,

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